NATIONAL POSTGRADUATE MEDICAL COLLEGE OF NIGERIA

CURRICULUM FOR SUBSPECIALTY OF PAEDIATRIC OPHTHALMOLOGY AND STRABISMUS

FACULTY OF OPHTHALMOLOGY

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NATIONAL POSTGRADUATE MEDICAL COLLEGE OF NIGERIA

FACULTY OF OPHTHALMOLOGY

THE TRAINING CURRICULUM

FOR

PAEDIATRIC OPHTHALMOLOGY & STRABISMUS SUBSPECIALTY

2022

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CHAPTER 1

1.1 Introduction and Philosophy

The fellowship prepares a Fellow in training for sub-specialty level competency in Paediatric Ophthalmology & Strabismus. It aims to enable them to acquireknowledge and necessary skills required to function effectively as clinicians, teachers, leaders and researchers in Paediatric Ophthalmology & Strabismus upon completion of the course.

About 43% of Nigerian population are children 0-14 years, between a quarter and a third of a typical ophthalmology out-patients attendees are children.
Training in paediatric ophthalmology and strabismus is imperative because childhood blindness prevention is a social, security and an economic issue. The long blind-year ahead of a child who is blind, the attendant challenges to the individual, family, and the society is imaginable and completely undesirable. In addition, difficulties encountered by individuals with significant visual impairment from early life to optimally contribute to the society and the fact that most causes of childhood blindness and visual impairment are either preventable or reversible with appropriate early detection and intervention appropriately delivered by expert level care.

The training is directed at ensuring acquisition of advance knowledge and skills in the management of eye conditions of childhood that are prevalent in our society including strabismus in adults while taking cognizance of the global environment in which we live and work. There will be a general emphasis on cataract, glaucoma, refractive errors/low vision, paediatric retinal eye diseases, paediatric ocular cancers, child eye health promotion, development of structures and linkages for early detection, referral for treatment of various child eye problems as well as ethics/professionalism, and research methods.

During the Subspecialty Fellowship Training, an optional MD Degree with Thesis defense will intercalate for 6 semesters. This will be concluded before the Final Part II Fellowship examinations

1.2 Admission Requirements

i. Bachelor of Medicine, Bachelor of Surgery (MB; BS) or its equivalent from a recognized university
ii. Full registration with the Medical & Dental Council of Nigeria
iii. Evidence of completion of the National Youth Service Corps programme or its exemption
iv. Completion of a minimum of the Part I level requirements for ophthalmology at the National Postgraduate Medical College of Nigeria (NPMCN).
v. A pass at the Part I examinations of the NPMCN in ophthalmology or its equivalent

GOAL OF THE PEDIATRIC OPHTHALMOLOGY PROGRAM

The goal of the pediatric ophthalmology program is to train the fellow to accurately diagnose and treat common and important pediatric eye diseases. Fellowship training in pediatric ophthalmology provides the fellow with the necessary knowledge and surgical skills to provide the patient with the highest quality medical and surgical care.

Course Description

The course prepares a Fellow in training for competency in Paediatric Ophthalmology & Strabismus. It aims to enable them to acquireknowledge and necessary skills required to function effectively as clinicians, leaders, teachers and,researchers in Paediatric Ophthalmology & Strabismus upon completion of the course.

Expected Competencies:

At the end of the subspecialist training in paediatric ophthalmology & strabismus, the trainee is expected to:

i. To build on the knowledge, skills, and competencies of the junior Fellows years and develop into an all-round competent Ophthalmologist with generic core competencies common, including administrative, and medical education skills
ii. Demonstrate an clear knowledge of anatomical and physiological differences between Paediatric and adult eyes
iii. Describe the epidemiology of childhood visual impairment and blindness and the principles of their detection
iv. Effectively and efficiently utilise diagnostic tools/services relevant to paediatric ophthalmology and strabismus cases and refer to /co-manage with other specialists as necessary.
v. To demonstrate competency in the examination and management of common childhood eye disorders and plan effective care with relevant stakeholders for the not so common childhood eye problems.
vi. Effectively function as an advocate, communicator, collaborator, partner, and manager in the discharge of his/her duties and obligations
vii. Effectively teach and train Fellow doctors, optometrists, medical students and other allied eye health workers, as well as have the capacity and ability to provide the required mentoring and leadership in an eye care team setting
viii. Competently and responsibly interpret, initiate and conduct basic, clinical, epidemiological and translational child eye health research either independently or as a research team member. The trainee is expected to develop an appreciation for pursuit of knowledge and advancement of ophthalmology through scientific enquiry, including clinical research, project design and completion, along with publications and presentations at learned society activities
ix. Consistently exhibit and demonstrate the highest levels of ethics and professionalism in their relationships with patients and their families, colleagues, allied eye health workers, other stakeholders in the health sector, and the society. The trainee will be expected to have imbibed

the skills for maximizing personal growth and career/ life aspirations, and also incorporating volunteerism/altruism into their life plans.

x. To plan, coordinate and manage child eye care program in order to encourage early detection, referral and management.

Duration of training

Three (3) years after passing the Part I level examinations of the National Postgraduate Medical College of Nigeria (NPMCN) or its equivalents. There will be rotations in different of ophthalmology specialties in the first year followed by 2 years rotation in the paediatric ophthalmology & strabismus subspecialty.

Table 1 Disposition and duration of postings in paediatric ophthalmology & strabismus

S/N	Course code	Courses	Duration (months)	Contact academic time (hrs/wk = Total hrs)	Contact Clinical/ Surgical time (hrs/wk = Total hrs)	Credit units
4.3.1	OPH 926	Cornea and anterior segment senior posting	3	4(48)	35(420)	12 (3+9)
4.3.5	OPH 927	Glaucoma senior posting	3	4(48)	35(420)	12 (3+9)
4.3.7	OPH 929	Ophthalmic plastic surgery senior posting	3	4(48)	35(420)	12 (3+9)
	OPH 931	Public and community eye health senior posting	3	4(48)	35(420)	12 (3+9)
4.3.14		Paediatric ophthalmology (24 months)		4(384)	35(3,360)	100
		TOTAL				48+ 100 =148

MANDATORY COURSES:

College-based courses:

PMC 951	Research Methodology in Medicine Course	1 week	30	-	2
PMC 952	Health Resources management Course	1 week	30	-	2
PMC 953	Ethics in Clinical Practice	1 week	30		2
PMC 901	Advanced Trauma Life Support (ATLS)	1 week	30		2
PMC 999	Dissertation writing, literature gathering, data analysis and submission	Concurrently during senior residency			12
	TOTAL				26

Faculty-based courses:

OPH 933	Clinical ophthalmology Revision course	1 week +3 days hands-on	30(45)	18 hours	2
OPH 934	Community ophthalmology course	1 week +4 days hands-on	30	24 hours	3

CORE PAEDIATRIC and STRABISMUS POSTINGS

S/N	Course code	Courses	Duration (months)	Contact academic time (hrs/wk = Total hrs)	Contact Clinical/ Surgical time (hrs/wk = Total hrs)	Credit units
	OPH 974	Introduction and Paediatric Cataract, Glaucoma and other anterior segment disorders	9	4(144)	35(1,260)	38
	OPH 975	Paediatric & Adult Strabismus	9	4(144)	35(1,260)	38
	OPH 976	Retinoblastoma and other Paediatric ocular tumors	3	4(48)	35(420)	12
	OPH 977	Retinopathy of Prematurity and other retinal diseases	3	4(48)	35(420)	12
		TOTAL				100

General education objectives

i. To develop manpower for eye health at the specialist level for the management of resources for the advocacy, control and treatment of eye diseases

ii. To develop specialists skilled and knowledgeable in the practice of ophthalmology with particular focus on research and training in eye health system and health services.

Methods and opportunities for training/ Mode of delivery

i. Ward rounds; ward consultation and outpatient clinics
ii. Bedside teachings
iii. Didactic Lectures
iv. Essay writing
v. Procedure sessions including surgical exposures: Recorded in log book
vi. Seminars and tutorials in relevant topics in the Subspecialty at least 3? seminars
vii. Grand rounds and teaching practices
viii. Unit-led research, dissertation writing
ix. Workshops and Conferences focusing on the subspecialty
x. Community outreaches including relevant declared world days.

Research Training

The Fellows are encouraged to learn the wholesome habit of systematic clinical problem solving, featuring observation, interpretation, deductive reasoning, decision-making, and intervention followed by further observation. This habit which Fellowsare encouraged to acquire during training is itself the basic requirement for competence in research.

Besides, training institutions are obliged to institute a research committee and an ethical committee part of the function of which is to screen research proposals within the department for appropriateness and scientific content as well as for compliance with ethical requirements.

A monthly subspecialty seminal is expected to be the forum in which Fellow in training present their projects for discussion and receive the criticism and guidance of their teachers and peers.

Teaching Skills

True to the hierarchical organization in medicine, Fellows have the opportunity of acquiring teaching skills during training through the practice whereby every doctor teaches those junior to him, other members of the health team, as well as counsel his patients and relatives in order to achieve an effective therapeutic alliance and good clinical practice.

In addition, Fellows have the opportunity to attend educational methodology workshops and management and computer courses conducted by the college. Training institutions are encouraged to avail their Fellows of this opportunity.

Management Training

A program director for the sub-specialty should be appointed to coordinate the training

Communication Skills

It is important that ophthalmologists should be effective communicators, not only in the ordinary running of clinical practice involving medical record documentation, case presentation, case referral and discharge summary writing, but also in the context of scientific journal publication, conference presentations and answering examination questions.

Therefore, the training programme must provide opportunities for the acquisition and evaluation of various levels of communication skills. (Appendix III)

Continuing Education (courses, workshops, conferences, etc.)

The need for continuing medical education especially in the field of ophthalmology and other medical specialties is just as vital as the period of fellowship training. Fellows of the Faculty of Ophthalmology are actively encouraged to continue their ophthalmological training throughout their active practice life. Among other means to achieve this, Fellows and Associate Fellows are encouraged to take active interest in activities of the Faculty and the College. They should be encouraged to take advantage of modern information technology (internet) facilities as well as attend both local and international conferences, association meetings where they communicate freely with colleagues, other groups or schools of thought. A Fellows in training should attend at least a conference (local or international) each year.

He/she should show evidence of having attended at least one Ophthalmological Society of Nigeria (OSN) conference to qualify to sit for the Part II Subspecialty examination.

Training in Paediatric Ophthalmology & Strabismus ophthalmology

The training in paediatric ophthalmology & strabismus sub-specialty shall take place in accredited training centres of the College in Nigeria and any other institutions/MDAs/Organizations so designated.

Mode of entry into the training programme

A written application to the Faculty of Ophthalmology of NPMCN for admission into the paediatric ophthalmology & strabismus sub-specialty training programme by a candidate gainfully employed in an accredited center

Teaching, Learning and evaluation of trainees.

i. At the commencement of the subspecialist programme, the trainee is advised to obtain become familiar with the procedure and surgical performance log book in which he/she will be expected to make verifiable entries on the procedures/surgeries performed.

ii. The activities of teaching, training and evaluation should follow a well-structured plan using all recognised and accepted conventional methods. These include and are not limited to the following: Tutorials/seminars ,Grand Rounds, Journal clubs, Low vision/Refraction clinics, Case presentations with exploration of the medico-legal and ethical implication where applicable, Clinical meetings/Audits, Investigation/work-up days, Hands-on surgical training (as evidenced by Surgical and Procedures logbook), Hands-on clinical training, Wet-lab practice to precede all surgical procedures on human subjects, simulation training, virtual/E-learning methods, Video-conferencing, personal study/research days, monthly assessment of logbooks, end- of -Rotation assessments ,end-of-specialty examination.

iii. Formative evaluations may be done at the completion of any rotation, and the format for such evaluations may be left to the discretion of the supervising consultant and the training institution. Informal feedback will be provided on a day-to-day basis to the trainee by his trainers. Evaluations will be based on performance in clinics, wards, operating theatres, teaching sessions and rounds, community activities, academic/literary output, and from feedback from other members of the health care team. Assessment of the Fellow's procedure and surgical log book, multiple Choice questions format, Orals, Objective structured clinical and practical examination methods may be used in evaluating these candidates at the completion of the subspecialisation training.

iv. The overall supervision of the Fellow lies with the program director for the sub-specialization.

v. Trainees will work to a level of clinical supervision commensurate with their clinical experience and level of competence. This will be the responsibility of the relevant clinical supervisor or trainer. Centres are also encouraged to allocate personal tutors/mentors to each Fellow in addition to the clinical supervisor/trainer and Fellows training co-ordinator. There should also be provisions for the evaluation of trainers by their trainees at the end of each rotation

Components of the training

i. The program aims to train ophthalmologists in the diagnosis and management of common diseases of the eye in the areas of clinical evaluation, use of various investigative procedures, medical treatment, surgical intervention and research. The clinical training involves fellows working in rotation through all the 7 different subspecialties (i.e., Cornea /external diseases/anterior segment and refractive surgery; Paediatric Ophthalmology & strabismus; Glaucoma; Vitreo-retinal diseases with emphasis on Medical Retina; Oculoplastic /orbital reconstructive surgery and oncology; Neuro-ophthalmology; and Paediatric ophthalmology & strabismus) in the out-patient and in-patient sections. They will also be encouraged to evaluate patients' problems in detail, using logic and clinical data to arrive at an accurate diagnosis. The trainee will be expected to provide triage services for the full spectrum of ophthalmologic disorders and diseases presenting to the department, including trauma and other emergencies. The subspecialty training prepares candidates for a professional career in paediatric ophthalmology & strabismus the ability to manage a paediatric eye care centre independently.

ii. The major components of the paediatric ophthalmology & strabismus subspecialty shall be:

a. Clinical exposure will combine outpatient, inpatient and surgical experience. The trainee assumes increasing responsibility for patient care, under the supervision of faculty members responsible for the cases in the respective subspecialties. They learn to perform common surgeries independently, and follow up these surgical cases. In addition to receiving clinical training from faculty, the fellow is required to participate actively in research, presentations, publications and in training of other ophthalmic Fellows and medical students in the institution.

b. Research exposure will require these trainees to engage in basic, clinical, epidemiological or clinical research and/or clinical trials and descriptive retrospective studies and develop an in-depth working knowledge of the current scientific literature of medical and surgical advances. They are expected to participate in relevant meetings/courses within and outside the National College, as well as those hosted by community, national or international Ophthalmology societies. Trainees are also expected to participate in any on-going research projects within their training institution in a basic or clinical field related to their area of interest. Time is allotted appropriately for this experience, and its value is enhanced by careful supervision, availability of laboratory facilities, and access to technical assistance.

c. Teaching exposure ensures that teaching is an integral part of the fellowship experience. The trainee is expected to be an instructor for other Fellow ophthalmologists, optometrists, medical students and other allied ophthalmic personnel in the training institution. The trainees are expected to presents cases at Grand Rounds and participate as instructors or lecturer at educational activities in the training institutions through practical and didactic presentations, and improve their techniques of examinations and interpretation of ancillary tests.

Rotations

The approved rotations will be in the specified subspecialties described below. It is recommended that the community health postings (item vii) are sandwiched in between ophthalmology rotations (items 1 to vi) to prevent a long a absence from the ophthalmology department. The Log book

further highlights the key cognitive, affective and psychomotor skills to be acquired during these rotations.

i. Cornea and Anterior segment (3 months)
ii. Glaucoma (3 months)
iii. Ophthalmic plastic surgery-3 months
iv. Public and Community eye Health-3months
v. Paediatric ophthalmology & strabismus (24 months)

CHAPTER 2

DOCTOR OF MEDICINE (MD) DEGREE IN OPHTHALMOLOGY (OPTIONAL)

Admission into this MD degree programme is only for medical doctors with MBBS or MBChB degree and are already admitted into residency training programme in Ophthalmology and registered as an associate fellow of the National Postgraduate Medical College of Nigeria and is strictly by:

i. Having passed Primary FMCOph Fellowship Examination or Exemption from Primary Examination of NPMCN

ii. Having passed Part I FMCOph Fellowship Examination of NPMCN

iii. The duration of the MD is minimum of 6 semesters post Part I in an accredited training Institution.

iv. Defense for MD thesis will be conducted by examiners in the Faculty of Ophthalmology as appointed by the National Postgraduate Medical College of Nigeria (NPMCN)

Philosophy

This postgraduate MD programme will be administered by the NPMCN in accredited training institutions. Candidates will focus on the creation of new and innovative knowledge. The MD degree is primarily for individuals with goals in ophthalmology **Research or Teaching**.

The NPMCN Senate oversees the MD degree programmes and its requirements, which entail coursework and independent research. Generally, the programme is for resident doctors undergoing residency training in the Faculty of Ophthalmology, NPMCN and other sister Colleges as approved by the Senate of NPMCN. It consists of course work during residency training in accredited residency training institutions during junior residency training period and first 2 years of senior residency training period in ophthalmology and independent research during the senior residency training period in ophthalmology.

The NPMCN MD degree programme ensures that Residents have a breadth and depth of knowledge in a particular discipline or area and candidate's ability to conduct research is assessed by the preparation of a written thesis.

CHAPTER 3

Course Content FOR THE MAIN SUBSPECIALTY POSTING FOR 24 MONTHS:

M-Must Know S-Should Know

1. Introduction and Paediatric Cataract, Glaucoma and other anterior segment disorders- OPH 974

Vision development in infancy and childhood [M]
Ophthalmic examination in children [M]
Refraction and amblyopia management [M]
Childhood blindness and vision loss, [M]
Congenital ocular anomalies, [M]
Ocular findings in chromosomal abnormalities [M]
Hereditary and congenital ocular motility or lid syndromes, [M]
Dyslexia [M]
Child abuse care[M]
Pediatric eye diseases, including uveitis, glaucoma, cataract [M]
To be able to recognize and treat glaucoma in children by surgical and nonsurgical treatment. [M]
To be able to recognize and treat cataract and lens subluxation in children by surgical and nonsurgical treatment. [M]
To identify ocular and nonocular manifestations of systemic diseases with ocular involvement. [M]
To be able to recognize and treat uveitis in children. [M]
Childhood nystagmus, [M]

2. Paediatric & Adult Strabismus- OPH 975

A. Strabismus Knowledge and Diagnostic Skills Goals

1. To perform and interpret eye examinations for children, including visual acuity tests appropriate for the child's age and condition. [M]
2. To perform refraction in children, including retinoscopy. [M]
3. To identify and manage amblyopia. [M]
4. To able to recognize and treat nystagmus in children. [M]
5. To describe and perform an accurate ocular motor and sensory examination—both basic and advanced—in pediatric and adult patients, including in patients who might be considered challenging (eg, uncooperative, cognitively impaired, nonverbal, preverbal). [M]
6. To apply the most advanced knowledge of eye movement anatomy, neuroanatomy, and physiology to patient evaluation and surgical-decision making. [M]
7. To describe clinical applications of basic and advanced sensory adaptations in strabismus patients. [S]
8. To be able to recognize and treat any cause of esotropia. [M]
9. To be able to recognize and treat any cause of exotropia. [M]
10. To be able to recognize and treat more complex strabismus patterns, such as restriction, paresis, and dissociated strabismus. [M]

11. To be able to recognize and treat most complex etiologies of alphabet patterns and oblique muscle dysfunctions. [M]
12. To be able to appropriately order and interpret testing such as orbital images (eg, CT and MRI) and Hess/Lancaster in the diagnosis, and medical and surgical management of the strabismus patient. [S]
13. To be able to diagnose and correctly manage those strabismus patients in whom refraction management is indicated. [M]
14. To competently be able to perform retinoscopy in children. [M]

B. Strabismus-Specific Surgical Goals

A fellow cannot serve as both a primary surgeon and a first assistant for the same surgical case. Examinations under anesthesia do not qualify as major cases.

The supervising consultant ophthalmologist should assess and certify these surgical procedures as and when performed. For this purpose, the candidates should maintain a Faculty-approved log-book.

1. To understand and describe indications and contraindications for basic and more complex strabismus surgery. [M]
2. To perform the preoperative assessment for patients undergoing extraocular muscle surgery, including measurement of strabismus angle in primary positions as well as the 9 cardinal positions of gaze and head tilts. [M]
3. To know the indications for preoperative measurements in the various gaze positions. [M]
4. To know the surgical anatomy, including muscle measurements, specific characteristics of the conjunctiva, subconjunctival fascia, individual muscles, and vascular supply in relation to extraocular muscle surgery. [M]
5. To know and be able to perform the basic surgical techniques involved in eye muscle surgery, including: setup, draping, prep and exposure, forced duction testing, incision options (and indications for the different incisions), and the principles of muscle dissection and suturing techniques. This would include proper instrument identification and choice and handling of instruments. [M]
6. To know and be able to perform basic rectus muscle recession and resection procedures. [M]
7. To know and be able to perform basic surgical procedures on the oblique muscles. This would include understanding of the indications for oblique muscle surgery and proper choice of available procedures. [M]
8. To perform more complex extraocular muscle surgery, including reoperation, tuck, and transposition procedures. [S]
9. To be able to manage postoperative complications for basic and more complicated strabismus surgery, such as a slipped muscle, globe perforation, endophthalmitis, anterior segment ischemia, and overcorrection. [S]
10. To understand the risks and benefits of adjustable suture surgery and to understand the techniques involved in adjustable suture surgery. [S]
11. To have a working knowledge of the tables used for surgical numbers for eye muscle surgery. [M]
12. To assess the competency of the fellow using a measure such as the ICO-OSCARs. [M]

3. Retinopathy of Prematurity and other retinal diseases- OPH 976

To be able to recognize and treat retinal diseases in children by nonsurgical, laser, and

surgical treatment. [S]
To be able to recognize and treat retinopathy of prematurity. [M]
To be able to recognize and treat optic neuropathies. [S]

4. Retinoblastoma and other Paediatric ocular tumors- OPH 977

To participate in diagnosis and management of retinoblastoma. [M]

Knowledge:

- Presentation of Retinoblastoma and mimics
- Early detection strategies
- Genetics of retinoblastoma
- Surgical anatomy and priciples
- High risk signs in Retinoblastoma
- Classifications of Retinoblastoma- how it impacts on the choice of treatment options
- Management tools

 Various treatment options available, indications and challenges
 Setting of goals for treatment
 Message content to care giver
 Counselling techniques
 Advocacy tools
 Stakeholder assessment and support

Diagnostic and clinical skills:

- History taking and risk factor assessment for retinoblastoma
- Evaluation of the child with retinoblastoma

- evaluation of both eyes for retinoblastoma (indirect ophthalmoscopy)
documentation of location and dimensions of tumours
- Ultrasonography
- interpretation of MRI/CT brain & orbit slides
-use of smartphone and wide field camera for retina imaging
- determination of high risk signs
-justification of treatment goals.

 Counseling of care givers
 Retinoblastoma Pathology
 Genetic studies and outcome interpretation and counseling.
 Skills in paediatric low and mono vision care
 Other skills from the paediatric set will also be required e.g. Visual acuity assessment in children

Decision making and communication skills:

- Systemic evaluation before treatment
- Decision making process for Chemotherapy, focal therapy (Laser, Cryotherapy, Brachytherapy,), External beam radiation therapy, Enucleation, Intra -arterial Chemotherapy, intra- vitreal chemotherapy.
- Risk factors for failure and complications

-High risk signs
-Extraocular & Systemic disease

- Counselling care givers and taking consent for retinoblastoma care

Surgical skills:

- Examination under anaesthesia (EUA) and staging of retinoblastoma
- Cryotherapy to the retina
- LASER: Photocoagulation and Trans pupillary diode laser (assuming that this is available)
- Metastatic workup for retinoblastoma
- Plan for treatment including the use of chemotherapy, cryotherapy and

Trans pupillary Thermotherapy (TTT) & radiations [brachytherapy and External Beam Radiation Therapy]

- Skills in enucleation technique [with special emphasis on harvesting long optic

Nerves, identification of high risk signs] with orbital implants

- Fitting of prosthesis

Clinical skills: Post-operative Management of Retinoblastoma

- Clinical assessment in immediate post op period
- Use of post-operative medications
- Identification of early post-operative complications.-Retrobulbar haemorrhage, implant exposure and extrusion
- Complication of brachytherapy and EBRT
- Follow up protocol

Management Skills

- Setting up and running retinoblastoma screening for early detection & management programs
- Advocacy and fundraising skills
- Public education
- Training of other team members
- Collaboration with other stakeholders in the management of retinoblastoma patients
- Developing a primary level early detection of retinoblastoma protocol through Education of paediatricians, midwives, immunisation, growth monitoring workers etc.
- Participation in retinoblastoma support group programs
- Establishing links with regional subspecialists and pathways for referring patients on for more complex care
- Participation and enhancement of national and international collaboration programs.

Rhabdomyosarcomas (S)

Course Contents Details

1. Anatomy and physiology of the eye Embryology of the eye, bony orbit and adnexae, Gross anatomy and histology of the eye, Ocular Physiology
2. Visual assessment of the paediatric patientVision milestones, Domain of visual function Types of visual acuity materials, Age appropriate visual acuity assessment
3. Binocular vision Binocular single Vision Simultaneous perceptionFusion, Stereopsis Assessment
4. Strabismus-types and syndromes, PseudostrabismusAnatomy for Strabismus & Ocular motility, Comitant strabismus Incomitant strabismusHorizontal deviations Vertical deviations Pattern strabismus, Selected strabismus syndromes, Strabismus assessment tools : sensory and motor testings
5. Amblyopia, Refractive (anisometropic and isoametropic)Strabismic, Stimulus Deprivation,

Reverse, Amblyopia studiesTreatment strategies

6. Childhood nystagmusPathophysiology Types of Nystagmus, Assessment of Nystagmus
7. Paediatric cataracts Embryology of the lens, Morphology of Paediatric CataractAetiology Surgical PrinciplesOptical corrections, Follow up
8. Paediatric Glaucoma Development of the Angle, Classification of Paediatric Glaucoma Paediatric Tonometry, Management of Paediatric GlaucomaReview of Management outcome
9. Optic nerve hypoplasia, symptoms/signs, causes, related disorders
10. Paediatric Ocular InjuryChild abuse, Blunt trauma Penetrating injury, Trauma to ocular adnexae Mechanism of paediatric ocular injury
11. Paediatric Retinal diseases, Leucocoria, Retinopathy of Prematurity, Rod-Cone Dystrophy Sickle cell retinopathy
12. Retinoblastoma, Epidemiology of Retinoblastoma, Presentation, Pathological features Genetics of retinoblastoma, Management principles, Intraocular retinoblastoma, Orbital retinoblastoma, Metastatic disease, Palliative therapy
13. Learning Disorder: Dyslexia, autism, the child with special needs
14. Ocular findings in Syndromes/ chromosomal abnormalities, Marfans, Downs syndrome, Ocular albinism, Inheritance, types, signs, related disorders
15. Paediatric Low Vision, Aetiology, evaluation, training in use of low vision devices, Rehabilitation principles
16. Childhood blindness, Epidemiology of Childhood blindness, Causes of visual loss (anatomical and aetiological classification)Prevention of childhood blindness, Early detection strategies- preschool, school age strategies

Teaching Methods:
Didactic Lectures, Seminars, Assignments, Journal reviews, Review ofdatabases, clinical case discussions, hands on sessions

Assessment methods
These could include practical sessions, assignments and tests. A final examination will be administered by NPMCN at the end of the course.

Content	**Tests/procedures**	**Patient mx**	**Communication**	
Fundamentals & Examination of Paed patients	X	X		
Embryology & Genetics		X	X	
Pharmacology	X	X		
Paediatric Surgical Procedures		X		
Paediatric Eye Health Promotion & Advocacy	X		X	
Counselling		X		

Proficiency in Equipment/Instrumentation

1. How to examine a child
2. Use of various age-appropriate tonometers-Perkins, Tonopen, Airpuff, ICare
3. Handheld slit lamp
4. Indirect Ophthamoscope
5. Handheld autorefractor-keratometer
6. Prisms
7. Fundus Camera/Smarphone
8. Gonioscopy

CHAPTER 4

CERTIFYING EXAMINATION OF THE COLLEGE

4.1 Application for College Certifying Examinations

The Fellowship Examinations are held twice a year in March/April/May and September/October/November. A call for application is published in at least one of the National Daily newspapers and College website in December and June for the March/May and September/November examinations respectively.

Candidates are advised to watch out for and comply with the examination application requirements as outlined in these advertisements.

4.2 Examination and formative Assessment format

Mode of formative assessment:

4.2.1 Continuous assessment activities recorded and scored in the purposive specialty log books.

4.2.2 One essay on a relevant subspecialty topic every month (minimum of 15)

4.3 Eligibility for final examination

4.3.1 Training for the stipulated minimum duration

4.3.2 A logbook indicating that the needed training has taken place

4.3.3 Submission of a dissertation in basic, epidemiologic, or clinical aspect of the subspecialty.

The proposal must have been approved at least 12 months before the Fellowship examinations.

One of the supervisors must be in an accredited centre.

4.3.4 An attestation from a trainer in the subspecialty that the trainee has met all the training requirements approved by the Faculty.

4.4 Assessment methods for MD Degree

These will include practical exercises, assignments and tests, Formative assessment, Summative assessment, Thesis presentation and thesis defence examination will be administered at the end of the course.

This thesis defence will take place at least 6 months before the Part II Final for FMCOph.

4.5 Teaching Methods: This will include didactic lectures, seminars, case studies, assignments and practical sessions.

4.6 Resources: Computers and internet access, Journal articles, Research materials from the ICO and American Academy of Ophthalmology.

4.7 Part II Fellowship Examination

The Part II Examinations is designed to complete the assessment of professional competence in ophthalmology before the award of the Fellowship in Ophthalmology (FMCOph). Candidates are eligible to write the examination at least by the 36^{th} month of senior residency training.

4.7.1 Dissertation Proposal Preparation and approval: The dissertation proposal should have at least 2 supervisors one of whom must be a Fellow of the Faculty and agree to critically supervise the design, collection of data, analysis of data and general write up of the dissertation. Submit written attestations by the supervisors indicating their willingness to supervise the project for the dissertation

The criteria to qualify as a supervisor is as the prevailing approval by the Faculty and the College. The proposal should be considered in a departmental seminar and approved by the department before sending to the ethical review board.

Approval from the relevant institutional review board or ethical approval for the study should be obtained before registration of the dissertation proposal with the College.

Exams shall be done not earlier than 12 months after proposal for dissertation has been approved by the College

The format for the Proposal and the Dissertation book is as in the main Faculty Curriculum and as approved by the College.

4.7.2 Components of the Part II Fellowship Examinations

The Part II Fellowship Examinations shall consist of:

a) A comprehensive oral examination on the candidate's dissertation. The "Dissertation orals" shall focus on the candidate's accomplishment of those objectives of the dissertation earlier stated in the Faculty main Curriculum.

b) An oral examination (VIVA VOCE) consisting of two sections:

i) General Ophthalmology where the candidate is expected to meet a set of at least two examiners to answer THREE questions in general ophthalmology over a 30-minute period

ii) Paediatric ophthalmology & strabismus: where the candidate is expected to meet a set of at least two sub-specialists to answer SIX questions in the sub specialty over a 60-minute period

The ORALS (VIVA VOCE) will cover the following components:

Principles of Ophthalmology- 10

Medical, Tropical and Surgical Ophthalmology including pathology in candidates Subspecialty area (Paediatric and Strabismus) -70

Ophthalmology -10

Management and other soft Skills- 10

The Standard setting method for Orals - Borderline group method should be used to obtain the pass score.

4.7.3 Classification of Examination Results

To pass the examination, a candidate must:

a) Have his/her dissertation accepted at *P* or *P+* level. **OR Passed MD Thesis defense at least 6 months earlier.**

b) Pass the Orals which is the Viva Voce

c) Conditions for Provisional Pass, Referral in Orals, Referral in Dissertation and Fail

i. A candidate whose dissertation needs some significant corrections, i.e. *P-* level pass, but who had passed Orals shall have a Provisional Pass.

ii. The corrections of the dissertation shall be made within three months and must be satisfactorily vetted by one of the examiners before it can be accepted. Once accepted, the provisional pass is converted to a full pass by the College.

iii. A candidate who has his/her dissertation accepted as *P* or *P+* level but fails in Orals shall be referred in the Orals only.

iv. A candidate who scores a P-level pass in the Dissertation and fails the Orals shall be deemed referred in Orals with Provisional Pass in Dissertation.

v. The candidate would be required to make the corrections in the book within 3 months after the exams and if satisfactory to the examiners, will be expected to repeat only the Orals. However, if the dissertation remains unacceptable to the examiners, the candidate would be required to sit both the dissertation and the Orals.

vi. A candidate, having passed the Orals but whose dissertation needs major restructuring, i.e. *P-1* level, shall be referred in the Dissertation only.

vii. A candidate whose dissertation needs major restructuring, i.e. *P-1* level and also failed the Orals is deemed to have failed the entire exam.

Pass: means a pass or provisional pass in dissertation and a pass in Oral examinations

4.7.4 Publication of the Results

The results of the Fellowship examinations in Ophthalmology are published by the College Registrar on approval by the Senate

4.7.5 Correspondence

The National Postgraduate Medical College of Nigeria or the Faculty of Ophthalmology does not normally enter into correspondence or discussion in respect of the details of a candidate's performance in the examination.

4.7.6 Designation of Fellowship in the Subspecialty

The designation of a fellowship in the subspecialty of the College shall be: **FMCOph (*Paediatric ophthalmology and Strabismus*).**

CHAPTER 5

ACCREDITATION OF TRAINING INSTITUTIONS GUIDELINES

5.1 Training institution eligibility criteria

i. Shall meet the requirements of the Faculty of Ophthalmology of NPMCN training requirements in Comprehensive ophthalmology
ii. Facility and equipment: in-hospital radiology, community medicine, basic biochemistry, haematology, microbiology and ophthalmic histology services with the requisite manpower
iii. Accredited Comprehensive ophthalmology services
iv. Manpower: at least one paediatric ophthalmology & strabismus specialist with a minimum of 5 years post fellowship and or minimum 10 years practising paediatric Ophthalmology & strabismus.
v. Case load:
a. Minimum surgical load as prescribed inn the specialty logbook
b. Clinic load of a minimum 20 patients per week per trainee
c. A sufficient case load of 30 patients per week
d. Active participation in the institutions of training where rotations will be hold as evidenced in the logbook

5.2 UNIFORM CRITERIA/GUIDE FOR ACCREDITATION

The Senate of National Postgraduate Medical College of Nigeria at its meeting of 3rd December 2015 approved Uniform Criteria /Guidelines for Accreditation of Training Institutions as follows:

BASIS

The College recognizes that the training of specialist requires

1. Qualified and experienced personnel
2. Appropriate infrastructure
3. A well-structured training programme that recognizes modern trends of training and assessments
4. Opportunities and evidence of acquisition of skills
5. Access to up-to-date information
6. Regular feedback and evaluation from trainers and trainees

PHILOSOPHY: The process must be:-

- Fair

Done when the institution is ready

- Transparent

What is being assessed and persons assessing is known to all

- Objective

Minimal bias in the choice of the accreditors – usually not from the institution of affiliates

- Instructive

Feedback given to heads of Institutions

- Monitored

Reaccreditation done after a clearly defined period – 5 years (Full), 2 years (Partial)

DEFINITIONS AND WEIGHTING

MANDATORY REQUIREMENT.

1. **Qualified personnel**

The College approved that the basic qualification for training is the Fellowship of College (by examination or election but not honorary). The individual must have had at least 5 years' experience working in a training institution and must be financially up-to-date. It is also expedient that departments in Institutions should have a good mix of the College training in the country so that trainees will have the maximum benefits of current rules and regulations governing their training. Weighting should be 15%of total accreditation score

2. **Appropriate Infrastructure**

This is a major pillar without which training cannot take place. What is appropriate will be defined by faculties. But facilities must be well constructed and maintained with the basic amenities

a. light
b. water
c. waste disposal

Available and with adequate backup. These includes

a. wards
b. out patients clinic
c. laboratories
d. theaters
e. radiological suites, etc

The weighting shall be a minimum of 10% of total accreditation scores. This can be sub-divided into core infrastructure (5%) and support infrastructure (5%)

3 **Equipment**

The College noted that equipment is an essential component in the acquisition of skills and competence. The minimum equipment needs will be determined by faculties and the procedure/log book will be necessary in assessing this component. The weighting shall be a minimum of 20% of total accreditation score.

4. **Structured training programme**:

The College has approved curricula and required competencies that trainees are expected to acquire. It is expected that institutions have a well-publicized (every trainee should have it in writing) structured programme which faithfully implemented and evaluated by a departmental residency committee. This programme must be seen by the accreditation team. Weighting should be 15% of total accreditation score.

5. **Opportunities/ Evidence of skill acquisition**

In recognition that our profession is an apprenticeship, all trainees must be provided with the opportunities of acquiring the necessary skills to be competent as a specialist. Records of such must be seen. This includes a procedure registrar, theater list and log book. Weighting should be 15% of total accreditation score.

DESIRABLE REQUIREMENT

6. **Access to new information**

This is a crucial element in making our trainees lifelong learners. It is therefore expected that there should be institutional support for trainees to attended updates, revisions, conference and seminars. It is also expedient that trainees acquire the skills at making presentation at departmental meetings and other scientific of professional. The library and the internet are veritable sources of information

and it is expected that training institutions have such facilities accessible to the trainees. Evidence of all these must be seen. Weighting should be 15% of total accreditation score

7. **Regular feedback and evaluation**:

Evaluation is an important aspect of training. It is recognize that assessment can be formative /continues or summative. The College traditionally have carried out summative examinations at the end of each part. However, training requires regular feedback from trainers to trainees and vice versa. Mentorship builds on the concept of regular evaluation, feedback, appropriate guidance and counseling of trainees. A good training programme must have these inbuilt and faithfully carried out. Weighting should be 10% of total accreditation score.

Total score is 100% or 100 points.

TABLE 7: ACCREDITATION TABLE OF REQUIREMENTS AND GRADING

No	Requirement	Inadequate 0	Partially Adequate 7.5	Full Adequate 15
1.	Qualified and experienced personnel a. Prescribed number (full time/Part time b. prescribed trainers: trainees ratio c. support personnel **(15 Points)**			
2.	Appropriate infrastructure a. basic: water, light, sewage etc b. core departments presents c. support departments presents **(10 Points)**			
3	Equipment a. core equipment b. support equipment **(20 Points)**			
4	Well-structured training programme a. seen by all b. content (lectures, tutorial , bedside sessions) **(15 Points)**			
5	Opportunities/ Evidence of skill acquisition a. Procedure Register b. Theater List c. Log Book **(15 Points)**			
6	Access to new information(15 point) a. library b. Internet **(15 Points)**			
7	Regular feedback and evaluation **(10 Point)**			
8	**TOTAL**			

< 0=49 (Scores less than 50%) - Accreditation Denied

≥50-74 (Scores equals to 50% and Less than 75%) - Partial Accreditation for 2 years

>75-100 (Scores equals or greater than 75% and above) - Full Accreditation for 5 years

2. **Effectiveness/function/role of visiting Consultants**

i. A visiting Consultant should have a minimum of 5 years post Fellowship experience.
ii. No training should take place in any institution without permanent consultants on ground.
iii. There must be documented evidence of activities of a visiting Consultant that residents are being supervised by him/her.
iv. For the purpose of accreditation the full time equivalent should be as follows:
2 visiting Consultants to 1 Full time Consultant.

3**. Period of Accreditation**

i. Partial accreditation should last for 2 years. Within the period of the Partial accreditation, one monitoring visit should be made to the institution.

ii. Full accreditation should last for 5 years. Within the period of the Full accreditation, two monitoring visits should be made to the institution.

4. **Effective Date of Accreditation**

The effective date for existing accreditation should be with effect from the date of visitation, irrespective of the time the Senate approves the report.
The effective date for new accreditation should be from the date of Senate approval.

5**. Trainers/trainee ratio**

The ratio of Residents to consultants should be minimum of 3:1 or Maximum 4:1. That is, One (1) Senior Registrar and Two (2) Registrars OR Two (2) Senior Registrars and Two (2) Registrars to one Consultant.

6. The number of Consultants is not the sole determinant for accreditation status, either as partial or full.

Every other criteria are taken into account to arrive at the verdict of either Partial or Full accreditation.

1. For any re-accreditation visit, the report of the previous accreditation visit should be made available to the current nominated panel member, to enable them to compare notes and ensure that progress is being made.

5.3 SUMMARY OF ACCREDITATION VISIT:

Should accompany the accreditation report and in formats approved by the College and the Faculty and contained in the main Faculty Curriculum

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A. Books

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3. Raab EL. Basic and Clinical Science Course 2010-2011 Section 6. Pediatric Ophthalmology and Strabismus. American Academy of Ophthalmology. Revised.

4. Prieto-Diaz J, Souza-Dias C. Strabismus. 4th edition. Butterworth-Heinemann; 2000.

5. Wright KW. Color Atlas of Strabismus Surgery: Strategies and Techniques. 3rd ed. Springer; 2007.

6. Traboulsi E. Genetic Diseases of the Eye (Oxford Monographs on Medical Genetics). 2nd ed. Oxford University Press; 2011.

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B. Journals

1. Journal of the American Association of Pediatric Ophthalmology. www.jaapos.org

2. Journal of Pediatric Ophthalmology & Strabismus. www.slackjournals.com/jpos

3. Ophthalmic Genetics. http://www.tandfonline.com/loi/iopg20

C. Online resources

1. AAO One Network. http://one.aao.org

2. ICO Ethical Guidelines for Ophthalmologists: Ethical Principles and Professional Standards. http://www.icoph.org/downloads/icoethicalcode.pdf

3. ICO-Ophthalmology Surgical Competency Assessment Rubric (OSCAR), including strabismus surgery rubric. http://www.icoph.org/resources/230/Surgical-Assessment-Tool-ICO-OSCAR-in-English-Chinese-Portuguese-Russian-Spanish-Vietnamese-and-French.html

4. *Curriculum for short Courses in Paediatric Ophthalmology* -. West African Health Organisation

5. OMIM Genetic Database. http://www.ncbi.nlm.nih.gov/omim

6. Orphanet. www.orpha.net/

7. Rosenbaum AL, Santiago AP. Clinical Strabismus Management: Principles and Surgical Techniques. 1st ed. W. B. Saunders Company; 1999. Out of print. Available free online: https://books.google.com/books?isbn=0721676731

8. von Noorden GK, Campos EC. Binocular Vision and Ocular Motility. 6th ed. Mosby; 2002. Out of print.PDF available free online: http://www.cybersight.org/.../3285_5.85MB_Binocular_Vision_and_Ocular_Motility.pdf

9. Orbis Cybersight. https://consult.cybersight.org/web/main

10. Simulated Ocular Surgery. http://simulatedocularsurgery.com/simulation/strabismus/http://simulatedocularsurgery.com/simulation/strabism

11. World Society of Paediatric Ophthalmology -WSPOS

12. American Academy of Pediatric Ophthalmology &Strabismus

Other Resources:

Internet resources, Videos, Online and hardcopy Journals, Databases
Webinar libraries from Nigerian Paediatric Ophthalmology & Strabismus Society-NIPOSS, Cybersight, WSPOS , IAPBand WHO data bases
Data from health facilities, oncology databases eg Retinoblastoma registers, national data from Min of Health, Social welfare, women affairs,Nig Disability Commission, Nig prevention of Blindness committee etc